Amendments to the Claims:

1. **(Previously Presented):** A N-radiohaloaryl-alkylcarboxamide radioligand wherein the alkyl moiety thereof is provided by a branched hydrophobic carbon unit, the carbon unit formed by acyclic alkyl groups and/or cycloalkanes, the radioligand having a high affinity to TRP-M8 receptors in cells and tissues and having a specific activity of at least about 20 Ci/mmol or greater, wherein the TRP-M8 affinity is characterized by a Kd of about 1×10^{-5} or less.

2. **(Previously Presented):** The radioligand as in claim 1 wherein the radiohalo moiety is covalently bound in the molecule.

3. **(Previously Presented):** The radioligand as in claim 2 wherein the radiohalo moiety is selected from fluoride and iodide radionuclides.

4. **(Previously Presented):** The radioligand as in claim 3 wherein the specific activity is about 250 Ci/mmol or greater.

5. **(Previously Presented):** The radioligand as in claim 1 wherein the alkyl moiety is represented by R-, and wherein R is a saturated or monoethylenically unsaturated alkyl-substituted cyclic or bicyclic alkyl radical containing a total of 7-14 carbon atoms and is selected from the group cyclopentanes, cyclohexanes, cycloheptanes, cyclooctanes, cyclononanes, [3.1.1]bicyclo-heptanes and –hept-5-enes, [2.2.1]bicyclo-heptanes and –hept-5-enes, and [2.2.2]bicyclo-octanes and –oct-5-enes, the alkyl radical containing from 1 to 3 $C_1 - C_5$ normal or branched alkyl substituents.

6. **(Previously Presented):** The radioligand as in claim 1 wherein the alkyl moiety is a branched chain represented by R'R''R'''- , where R' and R'' are C3 to C5 alkyl (which may be the

same or different), and R''' is hydrogen or a C1 to C5 alkyl, and wherein R', R'' and R''' provide a total of at least 5 carbons.

7. **(Previously Presented):** The radioligand as in claim 1 wherein the aryl moiety is a substituted aromatic radical represented by Y-, the substituents being

represented by $\mathbf{R_1}$, $\mathbf{R_2}$, and **X**, wherein

$\mathbf{R_1}$ is selected from the group hydrogen, hydroxyl, $C_1 - C_3$ alkoxy, $C_1 - C_3$ carboxyalkyl, $C_1 - C_3$ oxycarbonylalkyl,

$\mathbf{R_2}$ is selected from the group hydrogen, hydroxyl, $C_1 - C_3$ alkoxy, trifluoromethyl, nitro, cyano, halo, and

X is selected from the group $[^{18}F]$-, $[^{123}I]$-, $[^{125}I]$-, and $[^{131}I]$-.

8. **(Previously Presented):** The radioligand as in claim 7 wherein the aromatic radical includes monoaromatic rings, polyaromatic rings or heterocyclic aromatic rings.

9. **(Previously Presented):** Use of the radioligand of claim 1 in radioreceptor assays.

10. **(Previously Presented):** Use of the radioligand of claim 1 for scanning or imaging tissues bearing the TRP-M8 receptor.

11. **(Previously Presented):** A composition comprising a N-radiohaloaryl-alkylcarboxamide of Formula 1:

Formula 1

R-CONH-Y

where (a) **R** is a saturated or monoethylenically unsaturated alkyl-substituted cyclic or bicyclic alkyl radical containing a total of 7-14 carbon atoms selected from the group

cyclopentanes, cyclohexanes, cycloheptanes, cyclooctanes, cyclononanes, [3.1.1]bicyclo-heptanes and –hept-5-enes, [2.2.1]bicyclo-heptanes and –hept-5-enes, and [2.2.2]bicyclo-octanes and –oct-5-enes, the alkyl radical containing from 1 to 3 C_1 – C_5 normal or branched alkyl substituents, and (b) **Y** is a substituted aromatic radical containing substituents $\mathbf{R_1}$, $\mathbf{R_2}$, and **X**, wherein

$\mathbf{R_1}$ is selected from the group hydrogen, hydroxyl, C_1 – C_3 alkoxy, C_1 – C_3 carboxyalkyl, C_1 – C_3 oxycarbonylalkyl,

$\mathbf{R_2}$ is selected from the group hydrogen, hydroxyl, C_1 – C_3 alkoxy, trifluoromethyl, nitro, cyano, halo, and

X is selected from the group [^{18}F]-, [^{123}I]-, [^{125}I]-, and [^{131}I]-.

12. **(Previously Presented):** The composition as in claim 11 wherein the alkyl radical of (a) contains 8-12 carbon atoms and the total number of carbon atoms in the alkyl substituents on the α– and β–ring carbons are from 1 to 5.

13. **(Previously Presented):** The composition as in claim 12 wherein the carboxamide group is in an equatorial position relative to the plane of the cycloalkyl ring.

14. **(Previously Presented):** The composition as in claim 11 wherein the Formula 1 compound has a specific activity of about 20 Ci/mmol or greater.

15. **(Previously Presented):** The composition as in claim 11 wherein the Formula 1 compound is a ligand for the TRP-M8 receptor.

16. **(Previously Presented):** The composition as in claim 15 wherein the Formula 1 compound has a high affinity for the TRP-M8 receptor.

17. **(Previously Presented):** A composition comprising a branched chain N-radiohalo-substituted-aryl alkylcarboxamide of Formula 2:

Formula 2

R'R''R'''C-CONH-Y

where (a)

R' and R''are C3 to C5 alkyl (which may be the same or different), and R''' is hydrogen or a C1 to C5 alkyl, and R', R'' and R''' provide a total of at least 5 carbons; and (b) **Y** is a substituted aromatic radical with substituents $\mathbf{R_1}$, $\mathbf{R_2}$, and **X**, wherein

$\mathbf{R_1}$ is selected from the group hydrogen, hydroxyl, $C_1 - C_3$ alkoxy, $C_1 - C_3$ carboxyalkyl, $C_1 - C_3$ oxycarbonylalkyl,

$\mathbf{R_2}$ is selected from the group hydrogen, hydroxyl, $C_1 - C_3$ alkoxy, trifluoromethyl, nitro, cyano, halo, and

X is selected from the group [^{18}F]-, [^{123}I]-, [^{125}I]-, and [^{131}I].

18. **(Previously Presented):** The composition as in claim 17 wherein R', R'' and R''' provide a total of 5 to 10 carbons.

19. **(Previously Presented):** The composition as in claim 17 wherein

one or both of R' and R'' are branched alkyl radicals selected from the group 2-propyl (isopropyl), 2-butyl (sec-butyl), 2-methyl-1-propyl (iso-butyl), 2-methyl-2-propyl (tert-butyl), 2-pentyl, 3-pentyl, 3-methyl-1-butyl (iso-pentyl), 2-methyl-1-butyl, 3-methyl-2-butyl, 2,2-dimethyl-1-propyl (i.e. neo-pentyl), 1,1-dimethyl-2-propyl

20. **(Previously Presented):** The composition as in claim17 wherein the Formula 2 compound has a specific activity of about 20 Ci/mmol or greater.

21. **(Previously Presented):** The composition as in claim 17 wherein the Formula 2 compound is a ligand for the TRP-M8 receptor.

22. **(Previously Presented):** The composition as in claim 21 wherein the Formula 2 compound has a high affinity for the TRP-M8 receptor.

23. **(Previously Presented):** A method for using a radioactive ligand, comprising:

providing a N-radiohaloaryl-alkylcarboxamide radioligand wherein the alkyl moiety thereof includes acyclic alkyl groups and/or cycloalkanes, the radioligand having a determinably high affinity to the TRP-M8 receptor in cells and tissues and having a specific activity of at least about 20 Ci/mmol or greater; and,

contacting the radioligand with cells or tissues under conditions sufficient to permit specific binding between the radioligand and TRP-M8 receptors if said receptors are carried by the cells or tissues.

24. **(Previously Presented):** The method as in claim 23 wherein the high affinity to the TRP-M8 receptors is characterized by a Kd of about 1×10^{-5} or less.

25. **(Previously Presented):** The method as in claim 23 further comprising:

determining the amount or presence of TRP-M8 receptors in the cells or tissues of the contacting.

26. **(New):** A *N*-radiohaloaryl-alkylcarboxamide radioligand wherein the alkyl moiety thereof includes a cyclohexane radical, the radioligand having a high affinity to TRP-M8 receptors and having a specific activity of at least about 20 Ci/mmol or greater, wherein the TRP-M8 affinity is characterized by a Kd of about 1×10^{-5} or less.

27. **(New):** The radioligand as in claim 26 wherein the radiohalo moiety is covalently bound in the molecule.

28. **(New):** The radioligand as in claim 27 wherein the radiohalo moiety is selected from fluoride and iodide radionuclides.

29. **(New):** The radioligand as in claim 28 wherein the specific activity is about 20 Ci/mmol or greater.

30. **(New):** The radioligand as in claim 26 wherein the alkyl moiety is represented by R-, and wherein R includes from 1 to 3 $C_1 - C_5$ normal or branched alkyl substituents.

31. **(New):** The radioligand as in claim 26 wherein the alkyl moiety includes ((1R,2S,5R)-2-isopropyl-5-methyl-cyclohexyl)-.

32. **(New):** The radioligand as in claim 26 wherein the radioligand is 2-Isopropyl-5-methyl-cyclohexanecarboxylic acid (3-^{18}fluoro-4-methoxy-phenyl)-amide.

33. **(New):** The radioligand as in claim 26 wherein the radioligand is 2-Isopropyl-5-methyl-cyclohexanecarboxylic acid (3-^{125}iodo-4-acetyl-phenyl)-amide.

34. **(New):** A compound having the structure

R'-CONH-Y

where R' is a cyclohexane radical substituted with one to three C_1 to C_5 normal or branched alkyl groups and **Y** is a substituted phenylethyl- or substituted phenyl- radical containing substituents $\mathbf{R_1}$, $\mathbf{R_2}$, and **X**, wherein

$\mathbf{R_1}$ is selected from the group hydrogen, hydroxyl, $C_1 - C_3$ alkoxy, $C_1 - C_3$ carboxyalkyl, $C_1 - C_3$ oxycarbonylalkyl,